

**CLAIM:**

- 1           1.     A cutting tool comprising:  
2                 a body comprising sintered cemented carbide, cermet or ceramic; and  
3                 a hard and wear resistant coating on at least functional parts of the body, said  
4     coating comprising a structure of one or more refractory layers of which at least one  
5     layer comprises an alumina layer having a thickness of 0.5-25  $\mu\text{m}$ , and consisting  
6     essentially of single phase  $\alpha$ -alumina textured in the [300]-direction with a texture  
7     coefficient larger than 1.5, the texture coefficient being defined as:

$$TC(hkl) = \frac{I(hkl)}{I_o(hkl)} \left\{ \frac{1}{n} \sum \frac{I(hkl)}{I_o(hkl)} \right\}^{-1}$$

8     where

- 9              $I(hkl)$  = measured intensity of the (hkl) reflection,  
10             $I_o(hkl)$  = standard intensity of the ASTM standard,  
11            powder pattern diffraction data, card number 43-1484,  
12             $n$  = number of reflections used in the calculation  
13            (hkl) reflections used are: (012), (104), (110),  
14            (113), (024), (116) and (300).

- 1           2.     The cutting tool according to claim 1, wherein the alumina layer has  
2     a thickness of 1-10  $\mu\text{m}$ .

1           3.       The cutting tool according to claim 1, wherein the texture coefficient  
2       is larger than 3.

1           4.       The cutting tool according to claim 1, wherein the texture coefficient  
2       is larger than 5.

1           5.       The cutting tool according to claim 1, wherein the  $\alpha$ -alumina layer  
2       contains 0.01-10 percent by weight of residues of a texture modifying agent.

1           6.       The cutting tool according to claim 5, wherein the  $\alpha$ -alumina layer  
2       contains 0.01-5 percent by weight of residues of a texture modifying agent.

1           7.       The cutting tool according to claim 5, wherein the  $\alpha$ -alumina layer  
2       contains less than 1 percent by weight of residues of a texture modifying agent.

1           8.       The cutting tool according to claim 1, further comprising at least one  
2       layer having a thickness of 0.1-10  $\mu\text{m}$ , comprising a nitride, carbide, carbonitride,  
3       oxycarbide and/or oxycarbonitride of the metal titanium ( $\text{TiC}_x\text{N}_y\text{O}_z$ ) and that said  
4       layer is in contact with the  $\alpha$ -alumina layer.

1           9.       The cutting tool according to claim 8, wherein the at least one layer  
2       has a thickness of 0.5-5  $\mu\text{m}$ .

1           10.    The cutting tool according to claim 8, wherein the outer layer is  $\alpha$ -  
2 alumina.

1           11.    The cutting tool according to claim 1, wherein the outer layer is TiN.

1           12.    The cutting tool according to claim 1, the surface of the coated  
2 cutting tool is smoothened by means of a brushing operation.

1           13.    A method of producing a coated cutting tool comprising at least one  
2 layer of textured  $\alpha$ -alumina, the method comprising:

3           introducing a tool surface to be coated into a reactive atmosphere comprising  
4  $H_2$  and/or Ar;

5           providing the reactive atmosphere with a concentration of oxidizing species  
6 below 5 ppm;

7           initiating nucleation of the  $\alpha$ -alumina layer on the surface by first introducing  
8  $HCl$  and  $CO_2$  gasses into the atmosphere, than introducing  $AlCl_3$  gas into the  
9 atmosphere;

10          maintaining a temperature of 950-1050°C during nucleation of the  $\alpha$ -alumina  
11 layer; and

12          introducing a catalyst and a texture modifying agent into the atmosphere  
13 during growth of the  $\alpha$ -alumina layer.

1           14.    The method according to claim 13, wherein the oxidizing species  
2           comprises water vapor, the catalyst comprises  $H_2S$ , and the texture modifying agent  
3           comprises  $ZrCl_4$ .

1           15.    The method according to claim 13, wherein 0.05-10 percent by  
2           volume of the texture modifying agent is introduced.

1           16.    The method according to claim 13, wherein 0.2-5 percent by volume  
2           of the texture modifying agent is introduced.

1           17.    The method according to claim 13, wherein 0.5-2 percent by volume  
2           of the texture modifying agent is introduced.

1           18.    A method according to claim 14, wherein the addition of the texture  
2           modifying agent to the reaction gas mixture is 0.05-10 percent by volume of the  
3           total reaction gas mixture.

1           19.    The method according to claim 18, wherein the addition of the texture  
2           modifying agent is 0.2-5 percent by volume of the total reaction gas mixture.

1           20.    The method according to claim 18, wherein the addition of the texture  
2           modifying agent is 0.5-2 percent by volume of the total reaction gas mixture.